We Claim:

1. An expression system for delivering a recombinant protein to an egg comprising (i) a first DNA sequence encoding the recombinant protein and (ii) a second DNA sequence which can facilitate the delivery of the protein to an egg of an animal.

2. An expression system according to claim 1 wherein the second DNA sequence encodes a protein or peptide which can bind to an egg.

3. An expression system according to claim 2 wherein the second DNA sequence encodes a portion of an immunoglobulin protein that can bind to the egg.

4. An expression system according to claim 3 wherein the portion of the immunoglobulin is from the CH2-CH3 region of the Fc domain of the immunoglobulin.

5. An expression system according to claim 3 wherein the portion of the immunoglobulin binds to the Fc receptor on the egg.

6. An expression system according to claim 5 wherein the Fc receptor is the avian Fc receptor neonate.

7. An expression system for delivering a recombinant antibody to an egg comprising (i) a first DNA sequence encoding an immunoglobulin constant region (ii) a second DNA sequence encoding an immunoglobulin variable region and (iii) a regulatory region sufficient to provide for expression of the antibody.

8. An expression system according to claim 7 wherein the constant region is derived from a human immunoglobulin gene.

9. A method of preparing a recombinant protein in an egg comprising:

a) introducing an expression system according to any one of claims 1 to 6 into an egg-laying animal;

b) obtaining an egg containing the recombinant protein; and optionally

c) isolating the recombinant protein from the egg.

10. A method of preparing a recombinant antibody in an egg comprising:

a) introducing an expression system according to claim 7 or 8 into an egg-laying animal;

b) obtaining an egg containing the recombinant antibody; and optionally

c) isolating the recombinant protein from the egg.

11. A method of preparing a recombinant protein in an egg comprising:

a) introducing a transformed avian cell line that secretes a recombinant protein into an egg-laying animal wherein the avian cell line has been transformed with an expression system according to any one of claims 1 to 6;

b) obtaining an egg containing the recombinant protein; and optionally

c) isolating the recombinant protein from the egg.

12. A method of preparing a recombinant antibody in a fowl egg comprising:

a) introducing a transformed avian cell line that secretes a recombinant antibody into an egg-laying fowl wherein the avian cell line has been transformed with an expression system according to claim 7 or 8;

b) obtaining an egg containing the recombinant antibody; and optionally

c) isolating the recombinant antibody from the egg.

13. A method of preparing an egg that is free of a pathogen comprising:

(a) introducing an antibody specific for the pathogen into an egg-laying animal; and

(b) allowing the animal to lay an egg wherein the egg is substantially free of the pathogen.

14. An egg containing a recombinant protein.

15. An egg containing a recombinant protein produced according to the method of claim 9.

16. An egg containing a recombinant antibody.

17. An egg containing a recombinant antibody produced according to the method of claim 10.

18. A method of immunizing an animal comprising administering a therapeutically effective amount of an egg according to claim 16 or 17.

19. A transformed avian cell line that secretes a recombinant antibody.

20. A transgenic egg-laying animal whose germ line cells and somatic cells contain an expression system comprising (i) a first DNA sequence encoding a recombinant protein operably linked to (ii) a second

DNA sequence that facilitates the delivery of the recombinant protein to the egg.

21. A transgenic egg-laying animal whose germ line cells and somatic cells contain an expression system comprising (i) a first DNA sequence encoding an immunoglobulin constant region and (ii) a second DNA sequence encoding an immunoglobulin variable region.

22. A method of producing a recombinant protein in an egg of an egg-laying animal comprising:

(a) preparing a transgenic egg-laying animal whose somatic and germ line cells contain an expression system comprising (i) a first DNA sequence encoding a recombinant protein operably linked to (ii) a second DNA sequence that facilitates the delivery of the recombinant protein to the egg;

(b) obtaining an egg from the animal; and

(c) optionally, isolating the recombinant protein from the egg.

23. A method according to claim 22 wherein the second DNA encodes a portion of an immunoglobulin that can bind to the egg.

24. A method according to claim 23 wherein the portion of the immunoglobulin is from the CH2-CH3 region of the constant region domain of the immunoglobulin.

25. A method according to claim 23 wherein the portion of the immunoglobulin binds to the Fc receptor on the egg.

26. A method according to claim 23 wherein the Fc receptor is the avian Fc receptor neonate.

27. A method for preparing a recombinant antibody in an egg of an egg-laying animal comprising:

(a) preparing a transgenic egg-laying animal whose somatic and germ line cells contain an expression system comprising (i) a first DNA sequence encoding an immunoglobulin constant region (ii) a second DNA sequence encoding an immunoglobulin variable region and (iii) a regulatory region sufficient to provide for expression of the antibody; and

(b) obtaining an egg from the animal.

28. A method according to claim 27 wherein the constant region is derived from a human gene.

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